

CLAIMS

We claim:

- 1 1. A heat transfer device for low temperature ablation of tissue, comprising:
2 first and second elongated segments, one of said first or second elongated
3 segments providing a closed end of said heat transfer device;
4 a bellows connecting said first and second elongated segments; and
5 a tubular conduit disposed within and extending substantially through said first
6 and second elongated segments, said conduit having an inner lumen for
7 transporting a working fluid to a distal end of said one of said first or
8 second elongated segments providing a closed end of said heat transfer
9 device.
- 1 2. The device recited in claim 1, further comprising a smooth outer surface
2 on at least one of said first and second elongated segments.
- 1 3. The device recited in claim 2, further comprising longitudinal ridges and
2 grooves on said smooth outer surface.
- 1 4. The device recited in claim 1, further comprising an irregular interior
2 surface within at least one of said first and second elongated segments, said irregular
3 interior surface being adapted to induce mixing within a pressurized said working fluid.
- 1 5. The device recited in claim 1, further comprising a clot inhibiting outer
2 surface coating on at least one of said first and second elongated segments.
- 1 6. The device recited in claim 1, wherein said first and second elongated
2 elements are formed from highly conductive material.

1 7. The device recited in claim 1, further comprising:
2 a coaxial supply catheter having an inner catheter lumen coupled to said inner
3 lumen of said tubular conduit; and
4 a working fluid supply configured to dispense said working fluid and having an
5 output coupled to said inner catheter lumen.

1 8. The device recited in claim 7, wherein said working fluid supply is
2 adapted to dispense a perfluorocarbon working fluid.

1 9. The device recited in claim 7, wherein said working fluid supply is
2 adapted to produce a pressurized said working fluid at a temperature less than about 0
3 degrees C.

1 10. The device recited in claim 1, further comprising:
2 at least one additional elongated segment; and
3 at least one additional bellows connecting said at least one additional elongated
4 segment to one of said first and second elongated segments.